SEQUENCE LISTING

```
<110> Salceda, Susan
       Sun, Yongming
       Recipon, Herve
 <120> A Novel Method of Diagnosing, Monitoring, Staging,
       Imaging and Treating Breast Cancer
 <130> DEX-0085
 <140> 09/664,249
 <141> 2000-09-18
 <150> PCT/US99/16811
 <151> 1999-07-22
 <150> 60/095,232
 <151> 1998-08-04
 <160> 10
<170> PatentIn Ver. 2.1
<210> 1
<211> 544
<212> DNA
<213> Homo sapiens
<220>
<221> unsure
<222> (505)..(506)
<223> a, c, g or t
<220>
<221> unsure
<222> (510)
<223> a, c, g, or t
<220>
<221> unsure
<222> (521)
<223> a, c, g or t
<220>
<221> unsure
<222> (527)..(528) !
<223> a, c, g, or t
<220>
```

<221> unsure <222> (531)

<220>

<223> a, c, g or t

```
<221> unsure
 <222> (534)..(535)
 <223> a, c, g or t
 <220>
 <221> unsure
 <222> (540)
 <223> a, c, g or t
 <220>
 <221> unsure
 <222> (541)
 <223> a, c, g or t
 ctagtctcga gtctagagcg ccttgccttc tcttaggctt tgaagcattt ttgtctgtgc 60
 tccctgatct tcatgtcacc accatgaagt tcttagcagt cctggtactc ttgggagttt 120
 ccatctttct ggtctctgcc cagaatccga caacagctgc tccagctgac acgtatccag 180
ctactggtcc tgctgatgat gaagecectg atgctgaaac cactgctgct gcaaccactg 240
cgaccactgc tgctcctacc actgcaacca ccgctgcttc taccactgct cgtaaagaca 300
ttccagtttt acccaaatgg gttggggatc tcccgaatgg tagagtqtqt ccctqaqatq 360
gaatcagctt gagtcttctg caattggtca caactattca tgcttcctgt gatttcatcc 420
aactacttac cttgcctacg atatcccctt tatctctaat cagtttattt tctttcaaat 480
aaaaaataac tatgagcaac taaannaaan aaaaaaaaaa naaaaannaa naannaaaan 540
naga
<2.10> 2
<211> 1066
<212> DNA
<213> Homo sapiens
<220>
<221> unsure
<222> (729)..(813)
<223> a, c, g or t
<400> 2
gttgaccagt ggtcatgcca ctgcctgttg atttgttgaa aatattgttt acacgtatgt 60
tcttgttact gattgtcaga aagctggttt tgagactgca gcttggacta aattcagtca 120
tctggctgtc tggggaagca tgctgaccag tctggtgttc tttggcatct actcagccat 180
ctggtccacc attctcattg ccccaaatat gagaggacag aagaatggta ccggtactgc 240
caatggagat ggaggaagga gacagaaaga aacagagccc agaccctagg gaccaccagc 300
atttgcagaa tggataaaca gccttcttcc taacaaagga agcacagcaa ctgtgatcct 360
gagetgtgea caettetggt tgggattatt tetggtttet aetteetgtt tgaagatgtg 420
gcatggagag tgaacaagct gctgcccacc acctggcatc acagccccag aactcagcta 480
tttccatggg accacagcat ctcatctctg ggctgagcca gaaagacccc tactgaagtc 540
cagaggcact tttctgaaag gctctgcttt gacctgaagt attttatcta tcctcagtct 600
caggacactg ttgatggaat taaggccaag cacatctgca aaaaagacat tgctggagga 660
ggtgcaaaga gctggaaacc aagtctccag tcctgggaaa agcagtggta tqqaaaagca 720
nnnnnnnnn nnnnnnnnn nnnnnnnnn nnncatagca ccaatgacct gaagagctt 840
gttgaaggaa gactccatct gatgactcaq aqcaaqtatt ttttaqtqtq ttattqttat 900
tagcagaaag agggccataa aatacatggg gcaagctgaa tatatcttag gcaaaagaag 960
aaaatattca aattottatg ttattttato taattatttt atotottttt gtgtgtgact 1020
```

<210> 3

```
<211> 4197
 <212> DNA
 <213> Homo sapiens
 <400> 3
 ggcacgagac aactcatgct aggaggccag tcctagcatc accttatgtt gaaaatctta 60
 ccaatagtct gtgtcaacag aatacttatt ttagaagaaa aattcatgat ttcttcctga 120
 agcctacaga cataaaataa cagtgtgaag aattacttgt tcacgaattg cataaagctg 180
 cacaggattc ccatctaccc tgatgatgca gcagacatca ttcaatccaa ccagaatctc 240
 getetgteae teaggetgga gtgeagtgge geaatetegg eteaetgeaa actetgeete 300
 ccaggttcac gccattctcc tgccacagcc tcccgagtag ctgggactac aggcgcccgc 360
 caccaagcac agctaagttt tttatttata gtagagacgg ggtttcactg tgttagccag 420
gatggtctcg atctcctgac ctcgtgatct gcctgcctcg gcctcccaaa gtgccgggat 480
 tacaggcgtg agccaccgcg ccgggcctga tttcagtttc ttccagccct tcctattgtt 540
aacatggggg ttgtgttgaa gaatataaag ttacaaagtc aaggaagtag gaaacatttt 600
tacaagtatt atgtagccat cttggtgggg ctgtggtgag gtaggctgca aatgattctc 660
ctatttcttt ccctgagttc agaacatagg aattagattg atagacatca acatacccgc 720
tttattgctg actcatgaca actaatggga agacatggct cagatgtgca gccacagtga 780
gcttctgaac atttcttctc agactaagct cttacacaca gttgcagttg aaagaaagaa 840
ttgcttgaca tggccacagg agcaggcagc ttcctgcaga catgacagtc aacgcaaact 900
catgtcactg tgggcagaca catgtttgca aagagactca gagccaaaca agcacactca 960
atgtgctttg cccaaattta cccattaggt aaatcttccc tcctcccaag aagaaagtgg 1020
agagagcatg agtoctcaca tggaaacttg aagtcaggga aatgaaggct caccaattat 1080
ttgtgcatgg gtttaagttt tccttgaaat taagttcagg tttgtctttg tgtgtaccaa 1140
ttaatgacaa gaggttagat agaagtatgc tagatggcaa agagaaatat gttttgtgtc 1200
ttcaattttg ctaaaaataa cccagaacat ggataattca tttattaatt gattttggta 1260
agccaagtcc tatttggaga aaattaatag tttttctaaa aaagaatttt ctcaatatca 1320
cctggcatga taacattttt ctccttcgag ttcctttttc tggagtttaa caaacttgtt 1380
ctttacaaat agattatatt gactacctct cactgatgtt atgatattag tttctattgc 1440
ttactttgta tttctaattt taggattcac aatttagctg gagaactatt ttttaacctg 1500
ttgcacctaa acatgattga gctagaagac agttttacca tatgcatgca ttttctctga 1560
gttatatttt aaaatctata catttctcct aaatatggag gaaatcactg gcatcaaatg 1620
ccagtctcag acggaagacc taaagcccat ttctggcctg gagctacttg gctttgtgac 1680
ctatggtgag gcataagtgc tctgagtttg tgttgcctct tttgtaaaat gagggtttga 1740
cttaatcagt gattttcata gcttaaaatt tttttgaaga acagaacttt ttttaaaaac 1800
agttagatgc aaccatatta tataaaacag aacagataca agtagagcta acttgctaaa 1860
gaaaggatgg aggetetgaa getgtgaett cattateeet taataetget atgteetetg 1920
tagtacetta gatttetatg ggacategtt taaaaaetat tgtttatgeg agageettge 1980
taatttccta aaaattgtgg atacattttt tctcccatgt ataattttct caccttctat 2040
ttaaaaagaa aaaaaaagtc agtgtagtat ttacatattt taccctataa ggagctaaca 2100
taacttttga tttagtgtta ttcataaaat taggttagca gtttattaac cttttgtatt 2160
tgctctggca atgtttaata tctcataagc tatacacacc tcgaagccat caatgacaac 2220
cttttcttgc tgaatagaac agtgattgat gtcatgaaga caattttatc tccttttgcc 2280
ttccataatt tgtaccaggt tatataatag tataacactg ccaaggagcg gattatctca 2340
tcttcatcct gtaattccag tgtttgtcac gtggttgttg aataaatgaa taaagaatga 2400
gaaaaccaga agctctgata cataatcata atgataatta tttcaatgca caactacggg 2460
```

tggtgctgaa ctagaatcta tattttctga aactggctcc tctaggatct actaatgatt 2520 taaatctaaa agatgaagtt agtaaagcat cagaaaaaaa aggtaaacaa attgctcctg 2580 tggagatgat tggcatcaca tggtgttttg agctgataca cccaacactt gagctcactg 2640 caacagtacc agattttcac cgctatgcct cctttcactc tgggagtctt ccagaggtct 2700 tgcactcggg agagcatgct caggtttccc cagctctaca aaatcaccca gaatgccaaa 2760

```
gacttcaaca caagggtaaa taaggttgat ctcagaattg tcacctcaaa aaggccctgc 2820
cttccactgt tcagttctgg tcatctgcct atgagatatc tgaagcttga aagagaacac 2880
ttgaaaatca ctgagaccgt gactcccatc ccagcacaca cagcaagcca aagtccacac 2940
catggaaacc gattcctcat cttttaagaa taccatatgg atacttatat ataggcatga 3000
attaagcaac taggcettte aacagttttg gagaaggeea ttteceactt ttaaaataaa 3060
taatgeteet ataagateag ataetgtgtt gaccagtggt catgecaetg cetgttgatt 3120
tgttgaaaat attgtttaca cgtatgttct tgttactgat tgtcagaaag ctggttttga 3180
gactgcagct tggactaaat tcagtcatct ggctgtctgg ggaagcatgc tgaccagtct 3240
ggtgttettt ggcatetaet cagecatetg gtecaceatt eteattgeec caaatatgag 3300
aggacagatt aacaatggta ccagcacgtg cagaaaagaa agagtctccg cttgtctttg 3360
tetgattete etgteetete eatggaagtt acattttetg taaaggatga getgaaaatt 3420
ctcctggtcg ttgccagttg aacttctgct gtgctctggg aaggcattct cactctgttt 3480
atgttgtcta agtgcagaca tggatgtgca ggtttgctag aacctcctga ggatgtgcaa 3540
tggttctgtt catgcctgaa tcagttcttt tgggagtgga cattctttct ctccctcatg 3600
cacageetea ggeacatgge ttgagetatg geggeacgea gtatggeeat cacecaggta 3660
caccecttee ctaagaagag getetteagg ttacactegg gtactgttgt tatetggett 3720
attgtccata ggatcaacat agagtcctga ggtcagttca aaccatcaaa ccagggatgt 3780
tacttattat ttgaaaactt ctttggaaag ataatcttgg gttgttcagt gggaccagtc 3840
tttgacgggc aaatctccag aatacatggg gtcagttctc tcaggttcag gaagcatgta 3900
atctctctaa gattcattaa ttaaaaaaaa aagacacatg catagaaaaa tagaacaaaa 3960
tggaaactct ttattggata cctactatgg gttatgtgcc agggtttcct aatcatttgg 4020
ggacatgtgt gtataaacaa aaccaggcta tgtggccagg cagtgtgtgg ctcacacctg 4080
taatcccagt gcttagggaa gccaagttgc aaggatcgct tgaaaccagg agttcgagac 4140
```

<210> 4 <211> 1560 <212> DNA <213> Homo sapiens

-

<400> 4 agctcaatac ggaacatatt ctcagtcctc ctctggtcta caaagcctgt gatttcttgt 60 ctatggacag aacgtctggt ttaatctaca ggaacccata acttcctgaa gctttatgct 120 taacagtgac aacgtgagtc agttgaattt tattgtgttt cagtccgtag agtattagct 180 acagaaacct ttccattgcc atactgagaa actggcagca ggcagtgtgc ctacaggtct 240 acaaagaaac ttcagatcat cttcttgagg gaaagaagct gaagtgctac ataagatgct 300 tgtgcttcat aactctcaga agctgcagat tctgtataaa tccttagaaa agagcatccc 360 tgaatccata aaggtatatg gcgccatttt caacataaaa gataaaaacc ctttcaacat 420 ggaggtgctg gtagatgcct ggccagatta ccagatcgtc attacccggc ctcagaaaca 480 ggagatgaaa gatgaccagg atcattatac caacacttac cacatcttca ccaaagctcc 540 tgacaaatta gaggaagtcc tgtcatactc caatgtaatc agctgggagc aaactttgca 600 gatccaaggt tgccaagagg gcttggatga agcaataaga aaggttgcaa cttcaaaatc 660 agtgcaggta gattacatga aaaccatcct ctttataccg gaattaccaa agaaacacaa 720 gacctcaagt aatgacaaga tggagttatt tgaagtggat gatgataaca aggaaggaaa 780 cttttcaaac atgttcttag atgcttcaca tgcaggtctt gtgaatgaac actgggcctt 840 tgggaaaaat gagaggagct tgaaatatat tgaacgctgc ctccaggatt ttctaggatt 900 tggtgtgctg ggtccagagg gccagcttgt ctcttggatt gtgatggaac agtcctgtga 960 gttgagaatg ggttatactg tccccaaata cagacaccaa ggcaacatgt tgcaaattgg 1020 ttatcatctt gaaaagtatc tttctcagaa agaaatccca ttttatttcc atgtggcaga 1080 taataatgag aaaagcctac aggcactgaa caatttgggg tttaagattt gtccttgtgg 1140 ctggcatcag tggaaatgca cccccaagaa atattgttga ttgattccac tgtccatttc 1200 aaatotttot tatcagtaaa aaaacattaa ttoaaacaca agcattgtga totacattag 1260 cacaaaatgc aactgattat ctaggatctg tgtattactt aagctcaccc ttaacagttt 1320 taccttcctt ctcctctgta ttcttacaga aaattagaag ctcaatttta tggtctcata 1380

```
atttccttta tgacagacat ctcagaatta aaatcaccca aagccaatca ttagtgccaa 1440
 gataaccctt taacgggcaa cactttctta aatgaagact atttctttca tgaaaaaatt 1500
 <210> 5
 <211> 1227
 <212> DNA
 <213> Homo sapiens
 <220>
 <221> unsure
 <222> (327)
 <223> a, c, g or t
 <220>
<221> unsure
<222> (352)
<223> a, c, g or t
<220>
<221> unsure
<222> (369)
<223> a, c, g or t
<220>
<221> unsure
<222> (850)..(880)
<223> a, c, g or t
<220>
<221> unsure
<222> (1220)
<223> a, c, g or t
<400> 5
attttgtagt tcagcaaatc ctccaaatac acagcatgtt acaaggcact ggtggcacag 60
ggcacaacag gaaatgatat ttatttagca aattcattta acaaatatta ttgggcacct 120
gttatgtgag acactgtcct aggcactgtg ggataacaac agcaaacact tcacacaaca 180
gcctggcctt cctgtgtttt acaacagctc ctaaagatag ctgatatcaa gacatttgag 240
ggacacagtt catgtagaat caaaatatta gtatttcaga ataaggattt tttttctgaa 300
aagcatacag agaggaaaca gcttaanaat aggtcaagac ctaaaaacag antataatca 360
cggaataanc tggataaccc agacagtccc cacagaattt ctttcaggtc acagatttct 420
taaaactcac ccccaaaatg tgcctgcttg gttgtttgaa tcttgcataa ttaatgtcac 480
aggogcaago cgctgaactt agttgagatg cagaaaacaa acaaatgcaa tgacatatct 540
gagaagcatt tatgtaactc cggttaagtg gtgaggaggg gtgtgtgaag acagtgtgca 600
tgcatgagtg tgtattcata tatatgtgta tacatatgaa tttcactgtt attttccagg 660
gtctatggac aatgtggcag taagagtcta tgatgttctg aaacttttca cagtaaatcc 720
aaagattaca gaccttacaa ggtgcttgca ttctgttgct tttccatctg tcacttctca 780
ggttatttga ctgtgttcaa accttctttt ctttttcatt gagtttcatt ttttaaqctt 840
```

gttaaatgcn nnnnnnnn nnnnnnnn nnnnnnnnn tgtcatttt cacattatcc 900 tctcttctct gcaacaagga tagtaagatg tagatgaatg caaaaataat aacaacaata 960 aggaaatata ttaaagcttt aaaatatgca catatgtagt tctaaagagc aataacggta 1020 gtatctattt cgaacatgca ttaggcaaaa aagaaatcaa aactgaaatt ttcgtgtatt 1080 tttccccttg taagatgttc aaatgctaac ttcattttct cctttcctct atgtggcact 1140

ttctcaaaat atctatgaaa tacttttaga caaagattga gctggagaaa gagatacaaa 1200 tttccatccc cccagacagn gagacat 1227

```
<210> 6
 <211> 253
 <212> DNA
 <213> Homo sapiens
 <220>
 <221> unsure
 <222> (181)
 <223> a, c, g or t
 <220>
 <221> unsure
 <222> (201)
 <223> a, c, g or t
 <220>
 <221> unsure
 <222> (205)
 <223> a, c, g or t
 <220>
 <221> unsure
 <222> (238)
<223> a, c, g or t
<220>
<221> unsure
<222> (241)..(242)
<223> a, c, g or t
<220>
<221> unsure
<222> (250)
<223> a, c, g or t
<400> 6
gaacagcctc acttgtgttg ctgtcagtgc cagtagggca ggcaggaatg cagcagagag 60
gactcgccat cgtggccttg gctgtctgtg cggccctaca tgcctcagaa gccatacttc 120
ccattgcctc cagctgttgc acggaggttt cacatcatat ttccagaagg ctcctggaaa 180
nagtgaatat gtgtcgcatc naganagctg atggggattg tgacttggct gctgtcancc 240
nncatgtcan gcg
                                                                    253
<210> 7
<211> 943
<212> DNA
<213> Homo sapiens
<220>
<221> unsure
<222> (128)
```

```
<223> a, c, g or t
 <220>
 <221> unsure
 <222> (130)
 <223> a, c, g or t
 <220>
 <221> unsure
 <222> (935)
 <223> a, c, g or t
 <400> 7
gggggcctgg ccccggcccc tgtgaggacc ccgcgggtgc tggggtaaga ggctctagac 60
cetteacetg teagteacet gagggagget gaggecaage eccatecete agaateaagg 120
cttgcaancn cccctcacct gcccagtctc tgtccacacc cctcgggctg aagacggccc 180
tgaccaggcc ctgggcctca gcgaccaccc ctcccctcc tgcctggacc cagggagcag 240
gtgcaggggg ctccgagccc ctggtgactg tcaccgtgca gtgcgccttc acagtggccc 300
tgagggcacg aagaggagcc gacctgtcca gcctgcgggc actgctgggc caagccctcc 360
ctcaccaggc ccagcttggg caactcaggt gggccagaaa gcccccggtg gctgcggtgg 420
agetgggeae egeceegaet gaggeagetg etggaagagg gggtggeaga ggteaetgee 480
ctccctgcag gccccaccca ggaggccccc tctgaggaat ctctttgcag ttacctagcc 540
ccaggtgagg acgggcactg ggtccccatc cccgaggagg agtcgctgca gagggcctgg 600
caggacgcag ctgcctgccc cagggggctg cagctgcagt gcaggggagc cgggggtcgg 660
coggteetet accaggtggt ggeecageae agetaeteeg eccaggggee agaggaeetg 720
ggcttccgac agggggacac ggtggacgtc ctgtgtgaag tggaccaggc atggctggag 780
ggccactgtg acggccgcat cggcatcttc cccaagtgct tcgtggtccc cgccggccct 840
cggatgtcag gagcccccgg ccgcctgccc cgatcccagc agggagatca gccctaatga 900
tgctgtgtcc atgatgcttt taatnaaaaa aacccccact gca
                                                                    943
<210> 8
<211> 249
<212> DNA
<213> Homo sapiens
<220>
<221> unsure
<222> (110)
<223> a, c, g or t
<220>
<221> unsure
<222> (192)
<223> a, c, g or t
<220>
<221> unsure
<222> (205)
<223> a, c, g or t
<220>
<221> unsure
<222> (218)
```

<223> a, c, g or t

```
<400> 8
 atcacattaa gtcattgcta attttataaa caaaaacaat ggttttantt tgcatctccc 60
 tgattggtat tgctgtagaa catatttgga gaagtttgtt tgtctttggn gtttatttca 120
 tgaatagatt gtgtgcccat tttctcttgg ggtattcagt tttttattac tgatgtgagc 180
 atgtgtatgg gngattattt gatgnttatc agttttgntt agtagactgg caatatttag 240
 tcttgctgt
 <210> 9
 <211> 690
 <212> DNA
 <213> Homo sapiens
 <400> 9
 gacgcccagt gacctgccga ggtcggcagc acagagctct ggagatgaag accctgttcc 60
 tgggtgtcac gctcggcctg gccgctgccc tgtccttcac cctggaggag gaggatatca 120
cagggacctg gtacgtgaag gccatggtgg tcgataagga ctttccggag gacaggaggc 180
 ccaggaaggt gtccccagtg aaggtgacag ccctgggcgg tgggaagttg gaagccacgt 240
 tcaccttcat gagggaggat cggtgcatcc agaagaaaat cctgatgcgg aagacggagg 300
agcctggcaa atacagcgcc tatgggggca ggaagctcat gtacctgcag gagctgccca 360
ggagggacca ctacatcttt tactgcaaag accagcacca tgggggcctg ctccacatgg 420
gaaagettgt gggtaggaat tetgatacea acegggagge eetggaagaa tttaagaaat 480
tggtgcagcg caagggactc tcggaggagg acattttcac gcccctgcag acgggaagct 540
gegtteeega acaetaggea geeeeegggt etgeacetee agageeeace etaceaceag 600
acacagagee eggaceacet ggacetacee tecageeatg accetteeet geteecacee 660
acctgactcc aaataaagtc cttctcccc
                                                                   690
<210> ·10
<211> 294
<212> PRT
<213> Homo sapiens
Met Leu Val Leu His Asn Ser Gln Lys Leu Gln Ile Leu Tyr Lys Ser
Leu Glu Lys Ser Ile Pro Glu Ser Ile Lys Val Tyr Gly Ala Ile Phe
                                  25
Asn Ile Lys Asp Lys Asn Pro Phe Asn Met Glu Val Leu Val Asp Ala
Trp Pro Asp Tyr Gln Ile Val Ile Thr Arg Pro Gln Lys Gln Glu Met
Lys Asp Asp Gln Asp His Tyr Thr Asn Thr Tyr His Ile Phe Thr Lys
 65
                     70
Ala Pro Asp Lys Leu Glu Glu Val Leu Ser Tyr Ser Asn Val Ile Ser
Trp Glu Gln Thr Leu Gln Ile Gln Gly Cys Gln Glu Gly Leu Asp Glu
            100
```

Ala Ile Arg Lys Val Ala Thr Ser Lys Ser Val Gln Val Asp Tyr Met 115 120 125

Lys Thr Ile Leu Phe Ile Pro Glu Leu Pro Lys Lys His Lys Thr Ser 130 135 140

Ser Asn Asp Lys Met Glu Leu Phe Glu Val Asp Asp Asp Asn Lys Glu 145 150 155 160

Gly Asn Phe Ser Asn Met Phe Leu Asp Ala Ser His Ala Gly Leu Val

Asn Glu His Trp Ala Phe Gly Lys Asn Glu Arg Ser Leu Lys Tyr Ile 180 185 190

Glu Arg Cys Leu Gln Asp Phe Leu Gly Phe Gly Val Leu Gly Pro Glu 195 200 205

Gly Gln Leu Val Ser Trp Ile Val Met Glu Gln Ser Cys Glu Leu Arg. 210 215 220

Met Gly Tyr Thr Val Pro Lys Tyr Arg His Gln Gly Asn Met Leu Gln 225 230 235 240

Ile Gly Tyr His Leu Glu Lys Tyr Leu Ser Gln Lys Glu Ile Pro Phe245 250 255

Tyr Phe His Val Ala Asp Asn Asn Glu Lys Ser Leu Gln Ala Leu Asn 260 265 270

Asn Leu Gly Phe Lys Ile Cys Pro Cys Gly Trp His Gln Trp Lys Cys 275 280 285

Thr Pro Lys Lys Tyr Cys 290